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IN THIS ISSUE

Grain on the St. Lawrence
New Cotton Research Lab
Marketing in Soviet Union

AGRICULTURAL MARKETING SERVICE
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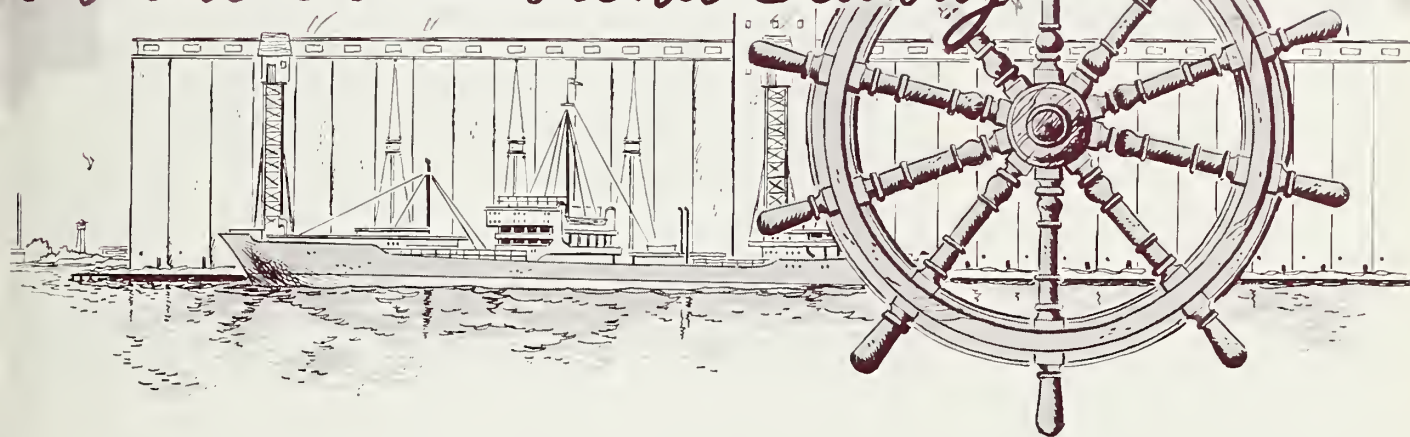
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Transporting GRAIN on the St. Lawrence Seaway



by Robert C. Haldeman

OCEAN-GOING vessels will nose out of harbors at Duluth, Chicago, Toledo, and other Great Lakes ports this spring and head for the high seas, 2,000 or so miles away. When the ships unload their cargoes in Europe, Africa, or South America, America's no longer land-locked grain belt will have been brought dollars closer to its large foreign markets.

Even now the grain industry is building new elevators, adding to storage, and promoting deeper harbors in anticipation of the benefits from the great St. Lawrence Seaway.

A recent study by economists in the Agricultural Marketing Service indicates that hopes of the grain industry for cheaper transportation costs are well founded in reality.

The economists estimate that the cost of shipping wheat or corn by Liberty ship, via the Seaway from Duluth or Chicago to Rotterdam (assuming a return payload), will be about 21 cents a bushel. The lowest previous charge between these ports has been about 35 cents. The St. Lawrence route could save 14 cents per

bushel on grain shipped from Duluth to Casablanca; and from the Minnesota port to Santos, Brazil, the savings could be as much as 16 cents a bushel.

Producers of other grains also stand to benefit on their overseas shipments. How much, in each instance, depends upon how close the point of shipment is to the waterway. The closer the production area, the greater the potential saving.

All or part of 17 States are in the area tributary to the Great Lakes. Included are Colorado, Montana, Wyoming, and the Dakotas in the West; Minnesota, Wisconsin, Michigan, Illinois, Indiana, and Ohio around the Lakes; Nebraska, Kansas, Missouri, and Iowa in the heartland; and Pennsylvania and New York along the eastern course of the waterway. All together, this group of States accounts for over 75 percent of the total U. S. annual production of grain.

The overseas movement of grain from these areas by Atlantic and Gulf coast ports has always been large. Considerable grain volume now may be diverted to the lower-cost Seaway route.

Early estimates, which forecast a Seaway movement of about 42 million bushels of grain from the United States and Canada in 1959, have al-

ready proven conservative. By March 1, nearly 25 million bushels had been booked for overseas shipment in April, May, and June.

Many more than the estimated 42 million bushels are now expected to move through the St. Lawrence Seaway before the end of 1959.

But, bright as the promise of this improved inland water route may be, it is not without its limitations. The lakes are frozen four months of the year, and the capacity of the connecting channels still limits traffic.

Use of large ships will help solve the traffic problem. So, too, will the construction of more grain storage facilities on the ice-free, lower St. Lawrence. And the concentration of grain shipments during months when the Seaway is free of ice will aid in counteracting the natural restrictions of the St. Lawrence.

In a few years, when work on the connecting channels is completed, a substantially larger volume of grain could move along the Seaway. Construction of additional locks in the Welland Canal, although not now planned, could further increase the amount of U. S. farm products moving along the St. Lawrence Seaway to overseas markets.

The author is a transportation economist in the Marketing Research Division of AMS. Single copies of the study, MRR No. 319, may be obtained without charge from the U. S. Department of Agriculture.

EXPORTING EGGS TO VENEZUELA

by Henry G. F. Hamann

WHEN the Government of Venezuela last November put into effect new marking and quality requirements for imported shell eggs, it presented some problems to U. S. exporters.

The law requires each imported egg to be stamped with its grade and the word "Importado." It also sets up certain quality requirements.

This law is intended both to encourage high quality in imported eggs and to aid the development of a self-sufficient poultry industry in Venezuela. However, since the Venezuelan poultry industry at present is small, the country will need imported eggs for some time to come.

Under the new law, all eggs are sample graded upon arrival to see if they meet the country's import requirements.

An on-the-spot study of this grading operation allowed USDA representatives to compare U. S. eggs shipped to Venezuela with those sent from Canada and Denmark. The comparison was not favorable to the U. S. product.

Canadian and Danish eggs were packed in new cases, with new packaging materials. Each case was labeled in Spanish. Certificates covering the shipments also were in Spanish. Markings on the individual eggs were clear and legible.

In contrast, some of the eggs shipped from the United States arrived in an assortment of packaging

materials which had a poor appearance when compared with the Danish and Canadian products.

Fillers and flats in many instances were not new, and the combination of poor cases and poor fillers and flats obviously was not giving the eggs enough protection. Some cases had as high as 6 to 9 percent checked eggs, and some contained 2 or 3 leakers. Many of the individual egg markings were poorly applied, smeared, and illegible.

However, a few shipments of U. S. eggs were well marked and arrived in good condition in new cases. These eggs were of excellent quality (equivalent to U. S. Consumer Grade A at time of shipment) and easily met Venezuelan import requirements.

This ready acceptance shows that U. S. egg exporters need encounter no unusual difficulty under the new Venezuelan law if they give careful attention to grading and packaging.

Apparently, the Venezuelan interpretation of Grade A quality is based upon present U. S. Standards for Quality. This should be of considerable help to U. S. exporters.

Exporters should, however, bear in mind that unless there is uniformity from case to case, they may find some of their eggs rejected.

Because the import law in Venezuela is new and the inspection staff limited, it is necessary, at present, to judge shipments on the basis of a rather small sample. If eggs are well graded and packed properly, this arrangement works in favor of the exporter, while poor packaging and improper grading can definitely be to his disadvantage. Of course, the present

arrangements are temporary and will be improved as facilities are set up for more efficient handling of egg receipts.

Meanwhile, U. S. egg exporters are faced with a serious competitive situation in Venezuela. Canada and Denmark are shipping large quantities of eggs into the country. These eggs are of fine quality and well packaged. They also are priced from \$2 to \$3 less per case than U. S. eggs. However, these price differences vary. During certain times of the year, imports from Canada and Denmark decline.

Importers in Venezuela pointed out that while price is a vital consideration, it does not present an insurmountable obstacle since a uniformly good quality product can be sold advantageously.

Agents representing U. S. exporters in Venezuela are, of course, also handling eggs from other countries. Their interests, therefore, are not necessarily confined to the U. S. product. Because they operate on a commission, they can be expected to concentrate on those eggs which will move to best advantage.

On the basis of the 3-week study of the Venezuelan egg importing situation as well as consultations with marketing and agricultural officials there, the following recommendations are suggested as a way to improve the competitive position of U. S. eggs in Venezuela:

1. Packing materials — New cases and fillers and flats are strongly recommended. The case should be strong enough to protect the eggs adequately.
2. Individual egg stamping — Individual eggs should be stamped legibly.
3. Case and certificate identification — Case markings should be in Spanish and certificates should be bilingual so the inspection staff, most of whom speak and read only Spanish, will find it easier to check the product.
4. Shell color — Because locally produced eggs are primarily brown shelled, this color, at least at present, meets with more favorable acceptance. Mixed colors are satisfactory if there is a sufficient percentage of browns with the whites. The white shell egg is acceptable if its quality is good.

Henry G. F. Hamann, Chief of the Grading Branch, Poultry Division, AMS, spent nearly 3 weeks in Venezuela in January examining the effects of the new Venezuelan egg import laws upon U. S. exports. Working with him was W. Raymond Ogg, USDA agricultural attaché at Caracas.



This roving frame is part of the new equipment recently installed in AMS Cotton Quality Research Laboratory at Clemson, S. C. The new pilot plant will be used for commercial mill research tests.

New Cotton Quality Research Laboratory

DOWN SOUTH in the land of cotton, USDA's Agricultural Marketing Service has set up a new cotton quality research laboratory which is in effect a pilot plant for commercial mill research tests of cotton quality.

The recently dedicated research laboratory is located in the School of Textiles of Clemson College, Clemson, S. C. It has been established at the request of the Cotton and Cottonseed Research and Marketing Advisory Committee, the cotton trade, and the National Cotton Council. This "research tool" will be available to all agencies of USDA and to the extent capacity will permit to State experiment stations and industry.

The research facility, at this stage, is composed of 1,008 spinning spindles. New equipment includes 4 standard carding machines, 1 high-speed drawing frame, 1 roving frame, and 4 spinning frames.

In addition, a complete opening and

picking line is being supplied by the School of Textiles of Clemson College. This will be used jointly by the Department and the textile school.

A fiber testing laboratory also has been added to this facility for routine evaluation of cotton quality.

At a later date, Clemson College will provide floor space for the addition of combing, weaving, and finishing facilities and for basic research on cotton quality.

Modern technology has brought about a rapid change in harvesting, drying, ginning, and cleaning processes. The trade reports that these changes appear to be impairing the spinning performance of cotton, thus increasing processing costs and lowering the value of finished products.

It is hoped that the new Clemson research laboratory will help provide more effective and practical methods of protecting the inherent properties of cotton, and that it will contribute

significantly in finding much more accurate and dependable methods and equipment for measuring the mill performance of American cotton.

In general, research at the Clemson pilot plant will include:

- Investigations of the properties of the cotton fiber and how they correlate with spinning, weaving, and finishing performance.
- Better, more rapid, and commercially practical means of measuring the important properties of cotton, particularly those not now being measured even reasonably satisfactorily.
- Better procedures for measuring the spinning, weaving, and finishing performance of cotton and for correlating these performances with laboratory and commercially used methods.
- Better measurement of the effect of production, harvesting, drying, ginning, and cleaning practices on the manufacturing performance of cotton.

Plans for several current research projects already include use of the new laboratory facility. One of these involves harvesting-ginning-processing tests on cotton from California and the Mississippi delta.

Two lots of cotton—one from a commercial gin in California and one from an Agricultural Research Service ginning research laboratory at Stoneville, Miss.—have been sent to Clemson for spinning evaluation.

A larger ginning-processing test will utilize the spinning, weaving, and finishing facilities at Clemson. This research will be on commercially ginned cotton from Robinsonville, Miss.

Other spinning performance tests are still in the planning stages. These will include flame-retardant treated cotton, blends of cotton of contrasting fiber properties, an accelerated ends down test, and an evaluation of a carding cleaner developed by the Southern Utilization Research and Development Laboratory of ARS.

In the area of quality maintenance and evaluation, the cotton quality research laboratory at Clemson will be used to analyze changes in the quality, market value, and manufacturing po-

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The Market for Frozen Fruits and Vegetables

by Robert B. Reese

Study shows that prospects are good for a continued expansion in total use of frozen fruits and vegetables by households. Rate of expansion may be above the rate of population growth.

SUCCESSFUL salesmen understand the importance of knowing their customers. But they are also aware that it's equally important to know who the nonbuyers are when they are interested in expanding the market for their product.

This is particularly true for frozen fruits and vegetables.

So, AMS specialists have been taking a good hard analytical look into survey data on household food consumption patterns. They wanted to get some more facts about the customers that buy frozen fruits and vegetables. They were also interested in seeing what markets existed for increased sales.

Statistics showed that, compared with most foods, frozen fruit and vegetable consumption had risen

rapidly during the postwar years. Not only was the past good, but a scrutiny of the buyers and their purchases indicated that, barring technological changes, it is reasonable to expect further expansion in household usage during the next few years.

The favorable outlook stems, in part, from the fact that higher income families tend to buy more frozen fruits and vegetables than lower income families. And, urban families buy more than rural ones. Thus, a continuation of present trends that show increases in average family income levels and in the share of families living in urban centers would likely result in greater purchases.

Population growth expands demand

However, these favorable factors may be secondary to the volumes required to feed our increasing population. A continuation of the present rate of population growth could mean an annual increase in production of frozen fruits and vegetables of about 1.5 percent per year.

An evaluation of customers also indicates other factors which could result in increasing frozen food sales. Many families are nonbuyers. During 1955 frozen green peas and strawberries were purchased, at least once, by 45 percent of the families. In contrast, only 8 percent bought frozen peaches. The low percent of families purchasing numerous frozen items indicates the possibility that new buyers might be found for these products.

Furthermore, there were wide regional variations in average quantities purchased. If a trend were to develop toward greater uniformity in food buying habits, this could result in increasing requirements for frozen fruits and vegetables.

Families in the Northeast used the greatest quantities of most items. Families in the East North Central and Western regions also had relatively high consumption levels.

Families tended to purchase these foods infrequently and in small quantities. Many appeared to buy for a meal at a time. Increasing the average frequency of purchase represents

another possible source of increasing usage of these products.

Also, there are elements which would tend to be less expansive in nature. For example, during the postwar years, frozen products became available in an increasing number of retail food stores. This helped expand sales. There are still many food stores that do not have freezer cabinets. However, they may account for around 10 percent of total dollar food sales. Increasing availability in retail food stores may be expected, therefore, to play a lesser role in lifting frozen fruit and vegetable sales during the next few years.

More homes have freezer storage space. Over 90 percent of the homes have mechanical refrigeration. The problem of providing at least temporary storage in the home appears to be a continually diminishing one.

Increase in average purchases

In addition, there may be an element of stabilization in purchasing patterns. When 1952 and 1955 purchases of 7 frozen products by urban families were compared, it was found that average purchases of these products increased from 6 to 35 percent. The percent of families buying, however, remained about the same. This means that the gain came primarily from purchasers buying more.

This look at the customer indicates the possibility of a continued expansion in total use of frozen fruits and vegetables by households. It indicates that the rate of expansion may be slightly above the rate of population growth. Merchandising activities, consumer education, and price adjustments, however, could push the rate considerably above this level.

This AMS study points up rather sharply who buys frozen fruits and vegetables and what type of consumer groups might offer room for market expansion. As such, it is part of the AMS program to broaden the market for farm products.

The full analysis may be found in "Family Purchases of Selected Frozen Fruits and Vegetables, 1955," MRR No. 317, an AMS publication.

The author is a staff member of the Marketing Research Division of AMS.

Effects of AGRICULTURAL EXEMPTION on Interstate Trucking



by James R. Snitzler

Ever since the fall of 1956, frozen fruit and vegetable processors have been able to have their products trucked to more markets and at lower rates.

The reason: Federal court decisions had declared interstate motor carriers hauling frozen fruits and vegetables exempt from the rate and route regulation of the Interstate Commerce Commission.

Although this exemption was later removed by Congress in August 1958, what happened *before* and *after* it took effect provides an interesting transportation story.

Studying the situation were transportation specialists from both the Agricultural Marketing Service and the Farmer Cooperative Service of USDA. Together, these researchers surveyed 107 frozen fruit and vegetable processors and 55 motor carriers. (These 107 processors shipped about 60 percent of the Nation's pack in 1955 and 1957.)

The researchers found that motor carrier rates on frozen fruits and vegetables dropped 20 percent shortly after the court decisions were announced. In contrast, nonexempt rail rates for these commodities increased from 6 to 14 percent during the 2 years between July 1, 1955, and July 1, 1957.

This resulted in a noticeable shift from rail to truck transportation of frozen fruits and vegetables. Whereas, in 1955, trucks carried 53 percent of the interstate traffic, in 1957 they

handled 56 percent. As expected, the 3 percent increase came at the expense of the railroads whose traffic declined from 47 to 44 percent during this period.

Truck shipments predominated in all parts of the country except the Mountain and Pacific States. Processors in these areas moved 70 percent of their interstate shipments by rail.

At the same time the switch from rail to truck was occurring, a similar switch took place within the trucking industry. Removal of ICC regulations gave previously unauthorized trucks an opportunity to compete with regulated carriers. As a result, the amount of frozen fruits and vegetables hauled by the newly exempted trucks grew from a flat zero to 27 million pounds in less than 2 years.

While some of this traffic came from an overall increase in interstate shipments (the 107 processors shipped 67 million pounds more during, than before, the exemption), a considerable amount was drawn from other transportation sources. The volume handled by regulated motor carriers declined 38 million pounds during this period. Shipments in buyer-owned and processor-owned trucks decreased 12 million pounds, and rail shipments were down 5 million.

About three-fourths of the exempt carrier tonnage originated in the four producing areas east of the Mississippi River.

But, all over the country, more frozen fruits and vegetables were hauled longer distances to market by truck. In 1955, only 40 million pounds went

to markets beyond 1,500 miles; in 1957, truck shipments to these distant markets totaled 63 million pounds.

Truck shipments moving to markets within 500 miles of the processing plant also increased during the 1955-57 period.

Of the total interstate truck shipments of frozen fruits and vegetables in 1957, 70 percent were hauled by for-hire vehicles. Regulated motor carriers still handled most of this traffic. These carriers, operating under the exemption, carried 71 percent of the total; newly exempted carriers hauled the remaining 29 percent.

Although, at the time of the AMS-FCS study, the trucks' exemption from ICC regulation was still in effect, processors felt that removing the exemption would increase transportation costs.

They also expected the elimination of service to many small buyers and the loss of small out-of-the-way and distant markets. Many anticipated a shortage of adequate trucking equipment and a poorer quality of service.

However, the Transportation Act of 1958, which put the interstate movement of frozen fruits and vegetables back on a regulated basis, also authorized the ICC to grant operating rights to exempt carriers who had established service to certain areas on or before May 1, 1958. Although a substantial number of carriers have filed applications for such authority, it is not known what percentage they represent of the total number hauling frozen fruits and vegetables during the exempt period.

The author is a transportation economist in the Marketing Research Division of AMS.

AGRICULTURAL MARKETING IN SOVIET UNION

Soviet marketing facilities and methods are inefficient and old fashioned by our standards. Their market pricing system, poor transportation, and inadequate refrigeration and processing facilities handicap Russian people in achieving the high standard of living that they so badly want.

by HAROLD F. BREIMYER



Collective farm markets in the larger Russian cities look and operate much the same as the farmers' markets in our country. Produce is sold for whatever price it will bring.



U. S. delegation saw this wheat storage in Krasnodar. Blowers move air through the grain. This State poultry processing plant outside Leningrad handled 150,000 birds last year. Workers do final picking by hand after birds have passed through an automatic machine.



RUSSIA lags far behind the United States in the marketing of farm products. Its inadequate marketing system handicaps the Russian people in achieving the good diets and higher standard of living they so badly want.

This was the main impression received by a team of U. S. Department of Agriculture economists who toured the Soviet Union last summer. The visit, part of an exchange program of technical delegations, brought U. S. economists in contact with both technical specialists and farm operators in that distant land.

The U. S. group visited grain storage, fruit packing, and poultry dressing plants. They window shopped in retail stores and dined in Russian restaurants.

In the rural areas, the delegation tramped through fields and inspected farm buildings in nine farming regions, all the way from Leningrad in the Crimea, and from Kiev in the Ukraine to Tashkent in Central Asia.

Despite a short growing season and low rainfall in many regions, much progress has been made in agricultural production in the Soviet Union. By specializing in cereal grains, the Russians have been able to obtain a high output of cereal foods. Their milk production is near ours. However, production of other animal products and of fruit and vegetables is much lower than in the United States.

Old fashioned facilities and methods

In marketing, the Soviet Union is more consistently behind the U. S. Their marketing facilities and methods are inefficient and old fashioned by our standards, and their market pricing system is inferior to ours.

Inadequacy of marketing in the Soviet Union points up the fact that a good marketing system is highly complex. Progress must be made on many fronts to achieve it, and this extends as far back as the farm itself.

In the Soviet Union, almost all of the farmland is controlled by the government. Only a small part is in peasant holdings.

Collective farms, which average 4,200 acres of sown area, occupy 70 percent of the land. Most of the other 30 percent is in State farms with acreages averaging 20,000.

As part of State control, each collective farm is assigned a delivery quota for farm products. This is the quantity the farm must deliver to the government each year. The price is decided in advance. If production exceeds the delivery quota, the excess may be sold to the government. Or, it can be sold on the free collective farm market.

Collective farm markets, which are set up in the larger

cities, look and operate much the same as our farmers' retail produce markets. Produce is sold for whatever price it will bring.

The collective farm markets are one of the few remnants of capitalism in Soviet Russia. Otherwise, Russian marketing bears slight resemblance to the U. S. system of free enterprise. Private trade or traders as in the United States do not exist in the U.S.S.R.

Collective markets outlet for surpluses

Collective farm markets are, however, an outlet for surplus products not only of collective farms, but also of individual peasants. In Russia each peasant (farmer or farm worker) is allotted a plot of ground, usually less than an acre, for his personal use. He also may own a limited number of animals. Most of what he raises is consumed by his family, but everything left over may be sold on the free market.

There are, in addition, consumers' cooperatives where peasant goods are sold on a commission basis. These are chiefly in the rural areas.

Government marketing and processing agencies receive produce delivered by collective farms under quota and all the produce from government-owned and operated State farms.

The Soviet Government exercises a particularly strict control over the marketing and distribution of cereal products. On the whole, grain products are handled rather well. But we observed a good deal of waste during and after harvesting.

In the homes and State-operated bakeries, the Russians ingeniously bake a wide variety of breads and rolls from this grain. In this way they attempt, rather unsuccessfully, to keep their cereal diet from becoming monotonous.

Government foods retailed in State stores

Retail outlets for all government distributed foods are the State stores. These may specialize in a single line of products, such as bread or dairy products, or they may carry a fairly complete assortment of groceries. The biggest such store in large cities will have separate sections for meat, fish, butter, cheese, canned vegetables, fresh fruit and vegetables, candy, and bottled beverages, both soft and hard.

There are refrigerated cases, yet the meat never looks fresh. Butter and cheeses are good, and together with bread and ice cream, these are among the best foods in the Soviet Union. Both canned goods and fresh produce are of limited variety.

Stores lack the bright lights and glistening porcelain and chrome of American supermarkets. While not as clean as our stores, they are more dark and drab than dirty.

Retail food stores in the U.S.S.R. seem to be always

The author is Head of the Livestock Fats and Oils Section, Agricultural Economics Division, AMS. He was accompanied to the Soviet Union by Sherman Johnson and Carl Heisig of the Agricultural Research Service; Lazar Volin of the Foreign Agricultural Service; J. W. Kirkbride, also of AMS; and Harold Wingo of the Motion Picture Service, who is credited with most of the photographs shown here.

crowded. People queue up for everything—three times for a single purchase. They stand in line to select the food and have it priced; they stand in another line to pay for it; and they line up again to exchange their receipt for their purchased goods.

A lot of food—especially fresh fruits and vegetables and milk—is also sold by sidewalk and street vendors. These, too, are part of the government distribution system and sell at fixed prices.

Government sets food prices

Prices for food in Soviet stores are set by government policy. Bread, for instance, is cheap. The poorest quality sells for as little as 7 cents for the equivalent of a pound loaf. (This price is calculated at a conversion ratio of 10 rubles to the dollar, which tourists receive.)

Milk delivered in bulk (you supply your own can) is little higher than U. S. bottled milk. Bottled milk in Soviet dairy stores, however, costs about twice as much as in the United States.

Meat, butter, and cheese, which are priced at \$1.10 a pound and higher, are luxury items in the Soviet Union. High even by U. S. standards, they appear very expensive to Soviet citizens who earn only a fraction as much income as their American counterparts.

Nevertheless, Russians have a high proportion of their income free to spend on food. Rents are subsidized by the government and are low, and many American expenditures such as those for private automobiles are outside the Russian's budget.

As a result, the Russian people have a reasonably good diet. By our standards, it's plain and not properly balanced, but we saw no signs of hunger or of obvious malnutrition.

State stores tend to specialize in staple foods that are in supply the year around. Collective farm markets distribute much of the perishable foods, including those with a highly seasonal supply. They sell a sizable part of the meat and eggs and a lot of the fresh fruits and vegetables.

Cereals and other less perishable foods, however, still predominate in the Soviet Union—despite a very real desire to upgrade the Nation's diet. This is due in part to deficiencies in refrigeration, processing, and transport. These are essential for the efficient marketing of perishable foods.

Transportation system very inadequate

Most pressing is the need for better transportation. With more than twice as much land area and a seventh more people than the United States, the Soviet Union has only a sixteenth as much paved highways. Most Russian roads are not paved, but simply dirt. They may be roadways that are graded occasionally or they may be unattended trails through the wheat or hay fields. Railroads are of light track and roadbed, which limit their capacity.

Poor transport, together with inadequate refrigeration

and processing, make seasonal foods such as fruits and vegetables available only in season and near the place where they are produced.

Deficiency in transport hurts in yet another way. It tends to force each area to be self-sufficient in food except for that great staple, grain. This blocks the advantages of regional specialization. We saw apples being raised on flat black table land so the local people might have fruit. Dryland wheat farms in Central Asia were required to produce livestock feed because it was too costly to ship in either feed or meat.

Milk is produced for fluid use only near cities. Little goes into manufacturing milk. Most is separated at the farm. The cream becomes butter; the skim milk is fed to hogs. While this was the practice in the United States 30 years ago when we too lacked refrigeration and good transport, dairying in this country has advanced far beyond this stage.

Why is Soviet marketing no better? Why, as they can turn out Sputniks and missiles, and do a pretty good job in producing wheat, sunflower seed oil, and milk, do the Russian people progress no faster in marketing?

Two reasons are obvious. First is the enormous size of the country. As distances are long, a good transportation system is expensive. So, the development of roads, highways, and railroads has been slow.

Second, wartime devastation of the heart of Russia's agricultural lands set back progress in marketing many years. Devastation exceeded any possible imagining.

Pricing system emphasizes quantity not quality

A third, underlying reason for delayed achievements in marketing lies in the Soviet pricing system. Rigid delivery quotas and fixed prices are designed chiefly to bring forth the quantities of food that are desired. They are less effective in obtaining high quality. Only recently has the Russian pricing system introduced variations for grade and quality that would encourage production of high quality products.

And finally, it seems to be true in the history of all Nations that interest, effort, and accomplishment in production precedes that in marketing. Progress nearly always begins with the first stages of production and comes last to the final stages of marketing.

Yet, a highly developed marketing system is essential to the high standard of material living to which all peoples aspire. We have long known this to be true in the United States, and the Russians are finding it to be equally true in their country. We have lifted our performance in marketing; the Soviets doubtless will also attempt to improve theirs.

We have no way of knowing whether Soviet policy will put heavy capital investment into improving marketing. Also, we doubt whether their state-controlled system would ever lead to as efficient a system as we have in the United States. But considerable progress seems entirely likely.

The Apparel Industry —

An Expanding Outlet for Cotton

by James R. Donald

COTTON growers and processors can look toward the apparel industry as an expanding outlet for their product, according to the Agricultural Marketing Service. Each year for the past 10 years, as the consumption of apparel has increased, cotton has increased its share of this market.

From a low of 56 percent in 1947, cotton had by 1957 brought its share up to 60 percent. This consistent post-war increase in the use of cotton for apparel items shows that in this area it has successfully met the competition of other fibers.

An even more optimistic picture appears when one looks at actual cotton consumption figures. Compared with 10 years ago, the apparel industry has increased its use of cotton by 45 percent—from 2,678,000 to 3,913,000 bales.

Together with the 10 percent larger consumption of the household market, this more than offsets a rather large loss in the industrial market. On the whole, 5 percent more cotton was used for manufacturing in 1957 than in 1947.

The growth in the apparel industry over the past decade has been accom-

panied by increasing expenditures for clothing. However, this increase was largely due to population growth.

In 1957, consumers spent \$19.5 billion for apparel compared with \$16.1 billion 10 years earlier. But the average person spent only \$2 more for clothing in 1957 than in 1947. These figures are "real" dollars, which eliminate the effect of price changes.

The increase in spending on apparel has been much less than the rise in income. As annual earnings have gone up, a larger proportion of expenditures have gone for services, luxuries, and durable goods.

It is well known that much more money is spent on women's and children's clothes than on men's wear. Statistics for both 1947 and 1957 show that 44 percent more goes for women's and children's apparel than for men's and boys'.

This is important to the cotton industry because women and children under 5 years of age make up 56 percent of our country's population. And, as a group, they are increasing faster than men and boys.

Economists who seek the answer to cotton's future in the apparel industry must consider all these things. With such information, they can project what the cotton-apparel situa-

tion will be in the years ahead.

For example, they estimate that our country's total real disposable income should reach \$600 billion by 1975—or, double that of 1957. The population could reach 235 million, 64 million more than in 1957.

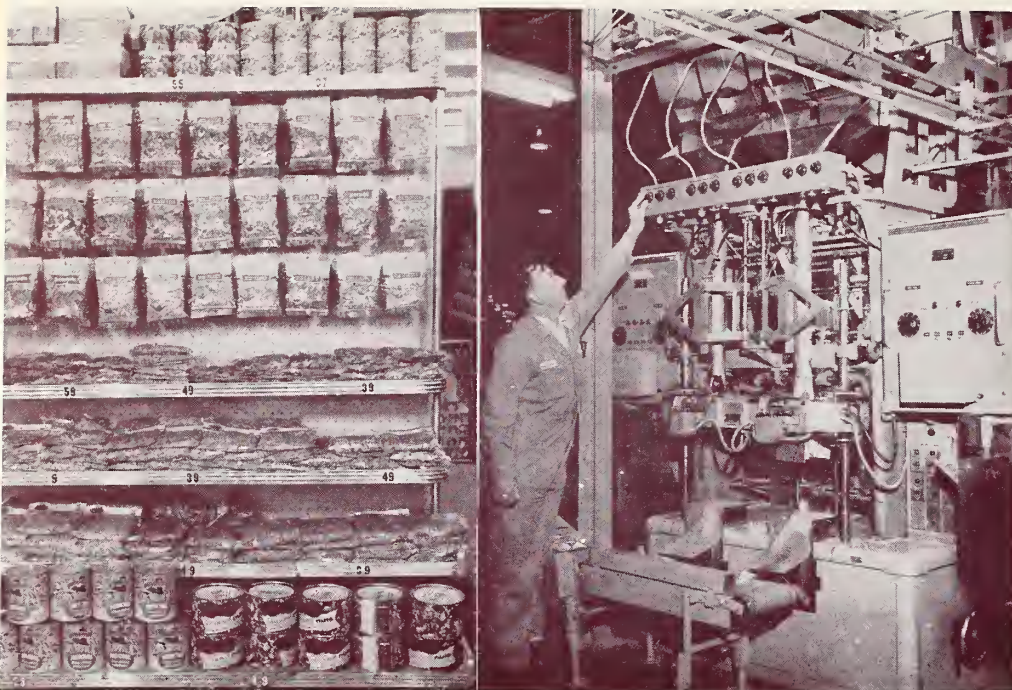
Further, if the proportion of income spent on apparel continues to decline as it did between 1947 and 1957, expenditures in 1975 will average only 5.7 cents of each dollar spent. But with a greater number of dollars being spent, the annual per capita outlay for women's and children's clothing would be \$166 (compared to \$138 today) and men's and boys' clothing will total \$117 a year (compared to \$95 in 1957).

Not so easily projected is the competition cotton will meet in the apparel industry from the other fibers. However, between 1951 and 1957 when interfiber competition was severe, annual per capita consumption of cotton rose nearly 2 percent. If price and price relationships remain unchanged, this rate of increase probably will continue.

Taking all these factors into consideration, economists estimate that the apparel industry will require 7.3 million bales of cotton in 1975—almost twice as much as in 1957.

The author is an economist in the Agricultural Economics Division of AMS.





Modern end display attractively presents a wide variety of shelled nuts packaged in plastic film. Impressive machine at right is an automatic bagger which fills, weighs, and seals the packages.

Extending Shelf Life of Packaged Nuts

TRANSSPARENT plastic film packages provide an inexpensive, lightweight container for shelled nuts. But they also provide several marketing problems.

Many things—such as light, oxygen, moisture, and temperature—affect the quality of film-packaged nut meats.

To gain a better knowledge of these factors and to find ways to minimize their effects, AMS scientists Arthur W. Wells and Harlan R. Barber of Pomona, Calif., recently checked the flavor, odor, color, and texture of five kinds of nuts.

They found that walnuts, pecans, and filberts keep a lot better if packaged in film bags containing nitrogen rather than air.

The oxygen in air causes the color and flavor of these nuts to change. This change became apparent after 4

weeks at 75° F. After 25 weeks at this temperature, air-packaged walnuts and pecans were dark colored and rancid, while those in nitrogen were still light colored and fresh.

But, because a tight seal is required (and often difficult to obtain) packaging with nitrogen in film is not used commercially.

Two kinds of nuts, pistachios and the relatively new macadamias, don't even need this extra care. These nuts remained in excellent condition in air as well as in nitrogen-filled packages.

The AMS tests also showed that light made a definite difference in the keeping quality of pecans and walnuts. Shelled nuts stored in darkness kept better than those exposed to bright light.

Colored cellophane overwraps were of little or no value even in the initial stages of storage. And, the red, green,

and amber tints gave the nuts an unappetizing appearance on the grocery shelf.

More important to quality was the moisture content of the nuts themselves. Walnuts and pecans keep best if they have a moisture content of about 3 percent, and even a slight variation from this causes inferior texture. With 5 or 6 percent moisture, these nuts became very rancid in 5 to 13 weeks. At high temperatures the skin discolored even at a moisture content below 3 percent.

Macadamias and pistachios, on the other hand, have few storage problems. Macadamia nut meats, containing 3.3 percent moisture and packaged in plastic bags stored at 32° and 38° F., had excellent quality for more than a year. Even when stored at 50° F. for this period, macadamias were still salable, though their flavor wasn't quite as good as those stored at lower temperatures.

Pistachio nuts are even easier to store. Temperature seems to make little difference in their quality. They kept just as well at 75° F. as they did in cold storage at 32° or 38° F. After 20 months, they were still free of rancidity.

For those nuts that do need help in extending their shelf life, AMS researchers found antioxidants very useful. Treated pecans were in good condition after 30 weeks' storage at 75° F., with no odor or flavor of rancidity. Untreated nuts under the same conditions were extremely rancid.

Although walnuts treated with antioxidant gradually became rancid, they remained edible about twice as long as nontreated ones.

Treatment with gamma radiation, on the other hand, was no good at all. Both walnuts and pecans immediately developed objectionable odors and flavors. At present, it doesn't seem likely that radiation can aid in the preservation of nut meats.

A full account of the AMS storage tests with film-packaged nut meats will be issued some time this month. This publication may be obtained from the Office of Information, U. S. Department of Agriculture.

MARKETING COSTS FOR SUGAR

by L. C. Larkin, Jr.

THE RETAIL PRICE for a pound of sugar has remained fairly stable in the past 7 years. It has increased only slightly more than the retail-store cost of other foods in a typical market basket.

While the cost of the market basket rose 9 percent, sugar prices increased 13 percent.

At the same time, the share received by beet and cane sugar farmers from the consumer dollar spent for sugar has gone down. Beet farmers in 1957 received only 36 cents of each dollar—or, 1 cent less than they did in 1950. Mainland cane producers received 38 cents, compared to 49 cents in 1950; and Puerto Rican cane farmers got 34 instead of 39 cents.

What happened to cause this widening spread between the farm and retail price of sugar has been studied by the Marketing Research Division of AMS. The study includes shipments to Chicago of mainland beet sugar, mainland cane sugar, and Puerto Rican cane sugar; shipments to New York of Puerto Rican cane sugar; and shipments to Los Angeles of mainland-produced beet sugar.

Together, these shipments present a good, overall picture of the assembly, processing, distributing, and retail costs for sugar.

Today, the farmer gets 4 cents on each pound of beet sugar sold; the processor receives 4.5 cents; and the distributor averages 2.5 cents.

Handling of the raw sugar alone came to 2.5 cents a pound on Puerto Rican cane sugar sold in New York and Chicago in 1957, and 2.1 cents on mainland cane sugar in Chicago.

These higher assembly costs reflect a general increase in land and water transportation costs, raw sugar mill operational expenses, brokerage fees on the sale of raw cane sugar, and labor costs. Most of these were higher in 1957 than in 1950.

So, too, were the cost of refining and processing the sugar, but this item varied rather sharply with the type of sugar and the marketing area.

For example, it cost about 2 cents a pound to refine and process Puerto Rican and mainland cane sugar sold in Chicago, while in New York, Puerto Rican cane averaged 2.7 cents.

Beet sugar produced in the central States and marketed in Chicago had a processing margin of 4.1 cents; in Los Angeles, beet sugar from the Pacific Coast area had a margin of 4.8 cents.

Piled high outside the refinery, these mainland-produced sugar beets stand ready to begin trip to market. Beet sugar in 1957 brought the farmer a return of 4 cents for each pound sold at retail. Processors got 4.5 cents and distributors averaged 2.5 cents for their role in the marketing process.

These charges, however, went in many different directions—for truck and rail transportation, packaging, labor, brokerage fees, and plant operations. Rail rates, for example, increased approximately 32 percent from 1950 to 1957, and wages for non-supervisory labor in the sugar manufacturing industry went up 40 cents.

In the distribution and retailing phase of the marketing process, costs also rose slightly. This phase, which includes operating overhead, local drayage, and labor payrolls, took 2.5 cents of the 11-cent retail price of a pound of sugar.

For each of the shipments under study, distribution and retailing costs ran something like this: 2.6 cents for Puerto Rican and mainland cane in Chicago; 1.6 cents for Puerto Rican cane in New York; 2.8 cents for mainland beet in Chicago; and 2.1 cents for mainland beet in Los Angeles.

This then is part of the story behind the widening farm to retail price spread for sugar. A more complete report may be obtained from Marketing Research Report No. 311, "Marketing Margins for Sugar," recently published by AMS.



The author is an agricultural economist in the Marketing Research Division of AMS.

Degreening Citrus Fruit In Large Pallet Boxes

by G. E. Yost, E. K. Bowman, W. R. Grierson, and F. W. Hayward

HANDLING fresh citrus fruit in large boxes, all the way from the picker to the packing line, is not only possible, but practical.

Cooperative research of the Agricultural Marketing Service and the Florida Experiment Station indicates that pallet boxes holding anywhere from 1,200 to 2,000 pounds of citrus can be used successfully in the degreening operation.

Tests, conducted under simulated commercial conditions, showed no significant difference in the color of fruit coming from pallet boxes than from standard field boxes. An average of 57.8 percent of the fruit held in bulk pallet boxes met the color requirements of U. S. No. 1 grade; 57.2 percent of those in field boxes met this grade standard.

G. E. Yost is an agricultural engineer and E. K. Bowman an industrial engineer in the Marketing Research Division of AMS, Gainesville, Fla. W. R. Grierson is a chemist and F. W. Hayward a biochemist in the Florida Experiment Station at Lake Alfred.

AMS tests were made last November and December in a degreening room measuring 19 feet by 14 feet, 4 inches and with a ceiling height of 7 feet, 5 inches.

Fruit was held in pallet boxes and standard field boxes. Most of the pallet boxes were of slatted construction; one, however, had solid sides and bottom. Each pallet box held either 1,200 or 2,000 pounds of fresh citrus.

In the degreening room, pallet boxes were stacked two high, while the smaller field boxes were placed in tiers of four.

Ethylene gas was trickled in through the air circulation system until the fruit in field boxes was judged sufficiently degreened. Air temperature was controlled at 85° F.; relative humidity maintained at 90 to 95 percent.

After the test period, which usually ran about 3 days, the fruit was sorted according to color. This sorting

showed that the kind of box made little difference in the effectiveness of the degreening operation.

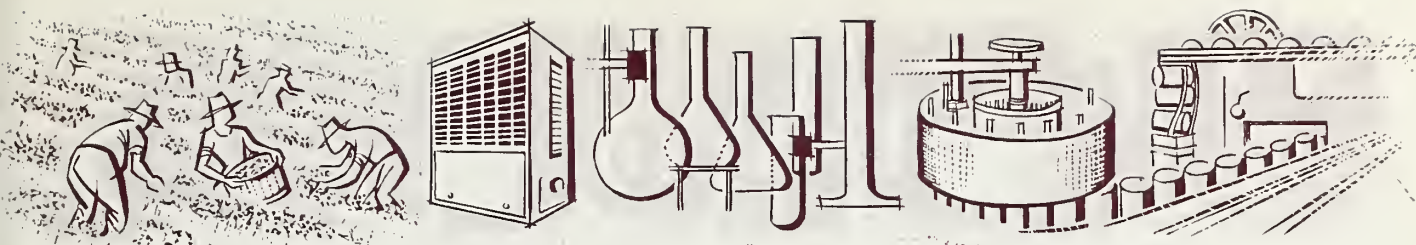
However, there was some difference between the fruit in the top and bottom pallet boxes. When stacked two high, these boxes did not allow a consistent degreening of all the fruit.

But, since the overall results were still just as good as in field boxes, there is no reason to reject the use of pallet boxes on this basis.

Although pallet boxes may not work as effectively in all types of commercial degreening rooms (only one type was tested), this study points the way toward better handling of fresh citrus through the use of large boxes. Part of a broad AMS program directed toward the development of improved work methods, equipment, and facilities for handling fresh fruits and vegetables, it shows how marketing of citrus fruit may be made more efficient and less costly.

Here's how pallet boxes and standard field boxes were stacked in experimental degreening room. Pallet boxes holding 1,200 pounds of citrus were piled two high; field boxes in tiers of four. At the right, one-ton pallet box is shown.





The Changing Market

Nonfood Uses—Fats and Oils

Because manufacturers of soap and drying oil products are using smaller quantities of fats and oils than formerly, nonfood uses of fats and oils are declining. According to Agricultural Marketing Service economists, this is a continuation of a trend that has been in progress for several years.

The reduction continued into 1958 as synthetic detergents again commanded more of the soap market and low-fat or nonfat products continued to replace drying oils in the manufacture of paints, varnishes, and lacquers. Part of the decline in 1958 was caused by reduced industrial activity that year.

While nonfood uses of fats and oils were declining, however, another category of consumption known in the trade as "other industrial uses" continued to rise in 1958. These "other industrial uses" of fats and oils include fats in animal feeds as well as the use of fats and oils in a long list of products—chemicals, lubricants and greases, tin andterne plate, pharmaceuticals, leather, candles, synthetic organic detergents, toilet articles, miscellaneous industrial products, and sundries. Inedible tallow and greases constitute the major fats and oils used in the "other industrial" category.

Last year, per capita consumption of fats and oils in soap averaged 5.3 pounds, a little over half a pound less than was used for this purpose in 1957 and the lowest on record. Consumption of fats and oils in drying oil products in 1958 was 5.2 pounds per person, four-fifths of a pound below

1957 and the lowest since the 1930's. Other industrial uses amounted to 11.6 pounds per person in 1958, three-tenths of a pound above 1957 and a new record.

The amount of fats and oils used in soap probably will continue to decline in 1959 because of the increased popularity of synthetic detergents. Drying oils will meet greater competition from nonfat products, though increased industrial production will help maintain consumption. But other industrial outlets should take more fats and oils than in past years, mainly because of the expected greater use of fats in animal feeds.

Small Cigars Popular

A type of smoking that enjoyed great popularity in Grandpa's boyhood is apparently gaining in public esteem today.

During the last quarter of 1958, small cigars commanded a U. S. sale of 130 million. In the first, second and third quarters, the sale of these cigars reached only 12 to 15 million. Before World War I, small cigars sold at the rate of more than a billion a year.

The small cigar is neither cigar nor cigarillo—it's much smaller than either. Internal Revenue Service reports small cigars separately. They enjoy a different tax rate from that applying to regular size cigars and cigarillos if their weight is not greater than 3 pounds per thousand.

Several new brands of small cigars have been announced already in 1959, according to Agricultural Marketing

Service. Most sell at the rate of 25 to 35 cents per pack of 20. If the output in 1959 is maintained at the rate reached late in 1958 and early in 1959, AMS estimates that about 600 to 900 million will be manufactured during the present calendar year.

Insect Resistance of Barrels

The containers and liners used for packaging commercially stored dry milk proved to be too much for milk-loving insects who recently were given an experimental chance at a free meal.

In a recent Agricultural Marketing Service study larger cabinet beetles and black carpet beetles were introduced into storage rooms containing fiberboard drums and wooden barrels of nonfat dry milk.

These two species are most frequently found in milk plants and warehouses; the two types of containers are most often used for commercial milk storage.

In each case, insects were unable to pass through a container using outer kraft liners, inner polyethylene liners, and a kraft sealer. They could, however, make their way through both drums and barrels, with and without sealers, and through each type of liner.

It took a combination of all these packaging materials to offer adequate resistance.

Since this is the standard method used, there is little need to worry about insect infestation in stored dry milk. This will be good news to the Commodity Credit Corporation, who

The Changing Market (continued from page 15)

has huge stocks of nonfat dry milk in storage. It will also be of interest to producers, who must concentrate on preventing infestation at the plant before the milk goes into storage.

Cotton Bale Coverings

Cotton, the fiber that clothes so many so well, is having its own apparel problem.

The Cotton and Marketing Research Divisions of AMS report that cotton bales are not suitably wrapped. The bagging is too heavy and offers poor protection for the contents.

During the 1957-58 season, more than half of the cotton was wrapped with open-weave jute bagging. Most of the remaining bales were covered with sugar-bag cloth.

Weightwise, the bagging alone averaged 11.8 pounds; metal ties added another 9.3 pounds. This 21.1 pounds constituted the tare or weight of materials covering the bale.

Since bales are sold on the basis of gross weight with a 4.4 percent allowance for tare, there is really no incentive for the grower to reduce the weight of wrappings and ties. In fact, any reduction below the 4.4 percent would force him to include more cotton in the bale for which no payment would be received.

This unique economic problem seriously hampers efforts to improve the cotton bale as a commercial package.

In addition, the bale covering suffers severely from rough treatment during the sampling process. Although

the bale may leave the gin in good condition, repeated cuttings made for sampling purposes damage it considerably. A method of sampling without cutting would be a big help in keeping the bale in good condition.

Previous attempts, both in reducing the weight of the wrappings and in developing a less destructive sampling method, have proved largely ineffective. AMS researchers, however, hope that by analyzing the problems involved, further and more fruitful efforts may result.

Single copies of Marketing Research Report No. 303, which deals with "Cotton Bale Coverings," may be obtained without charge from the Office of Information, USDA.

Less Dairy Plants

A smaller number of plants are turning out a larger amount of dairy products than ever before.

Production of all major manufactured dairy products, except butter, has increased rapidly during the past two decades. At the same time, the number of plants making these products has experienced a sharp drop.

In a comparison of 1937 and 1957 data, statisticians in the Agricultural Estimates Division of the Agricultural Marketing Service find that the number of butter-making plants has decreased 56 percent in the past 20 years. Annual average production, however, increased 192 percent.

Only 48 percent as many plants were making American cheese in 1957

than in 1937, but they turned out 400 percent more cheese.

Evaporated milk manufacturers numbered 145 in 1937; only 85 in 1957—a drop of 41 percent in the 20-year period. The remaining 85 manufacturing firms, however, turned out 15,675,000 pounds more evaporated milk per plant in 1957 than the 145 plants produced in 1937. Annual average output increased 220 percent per plant.

Greater per plant production also was noted in the ice cream industry. Here, the increase came to more than 330 percent. The number of ice cream manufacturing plants declined 32 percent.

COTTON RESEARCH

continued from page 5

tential of cotton during storage. Studies will also be made on the effects of various packaging and handling methods on quality preservation and costs, and more economical ways to process various qualities of cotton will be sought.

These are important problems in strengthening and expanding markets for cotton. The new laboratory at Clemson is part of the Department's broad research program—a program looking toward many improvements in cotton, beginning with production, harvesting, and ginning practices and extending through all phases of handling, storing, transporting, processing, and on to the final consumer.